ESG Economic Validation

The Economic Value of Migrating On-premises SQL Server Instances to Microsoft Azure SQL Solutions

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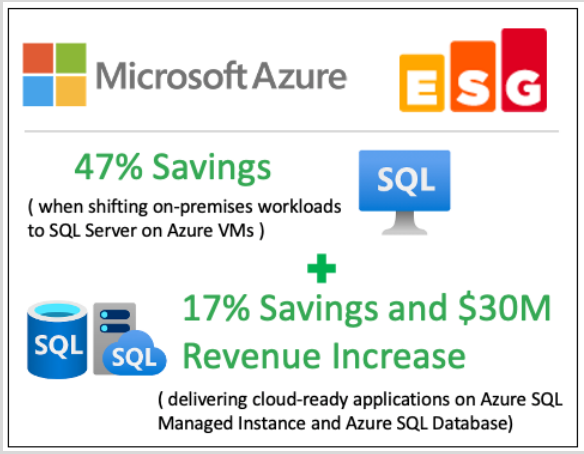
Executive Summary



Organizations have relied on Microsoft SQL Server to successfully power operations, applications, and business intelligence for decades. These companies have invested significant time and resources in training, developing, and integrating with other systems. In order to maximize the utility of their data, organizations need to be able to spend less time managing their databases and more time realizing the value provided by them. On-premises databases can be costly to deploy, manage, maintain, and scale. For this reason, many have looked to the cloud to help modernize applications and operations. The agility offered by the cloud is undeniable, but some may delay decisions as they struggle to weigh uncertainties and risks around comparing technologies, dealing with licenses, and making a change.

ESG validated that by moving on-premises SQL Server to the Microsoft Azure SQL family of cloud databases, organizations have realized significant savings and benefits with minimal impact to operations, while extending the value of purchased licenses and investments in training and development. ESG's modeled scenarios, based on validation with real world customers, predict that organizations can save up to 47% when migrating their database from on-premises deployments to Microsoft SQL Server on Azure Virtual Machines (Infrastructure-as-a-Service or IaaS). The modeled organization can further lower costs for modernized cloud-ready applications by an additional 17% with Azure SQL Managed Instance and Azure SQL Database (Platform-as-a-Service or PaaS) while speeding the development and delivery of revenue-generating applications, resulting in an expected increase in revenue of $30M.

Introduction

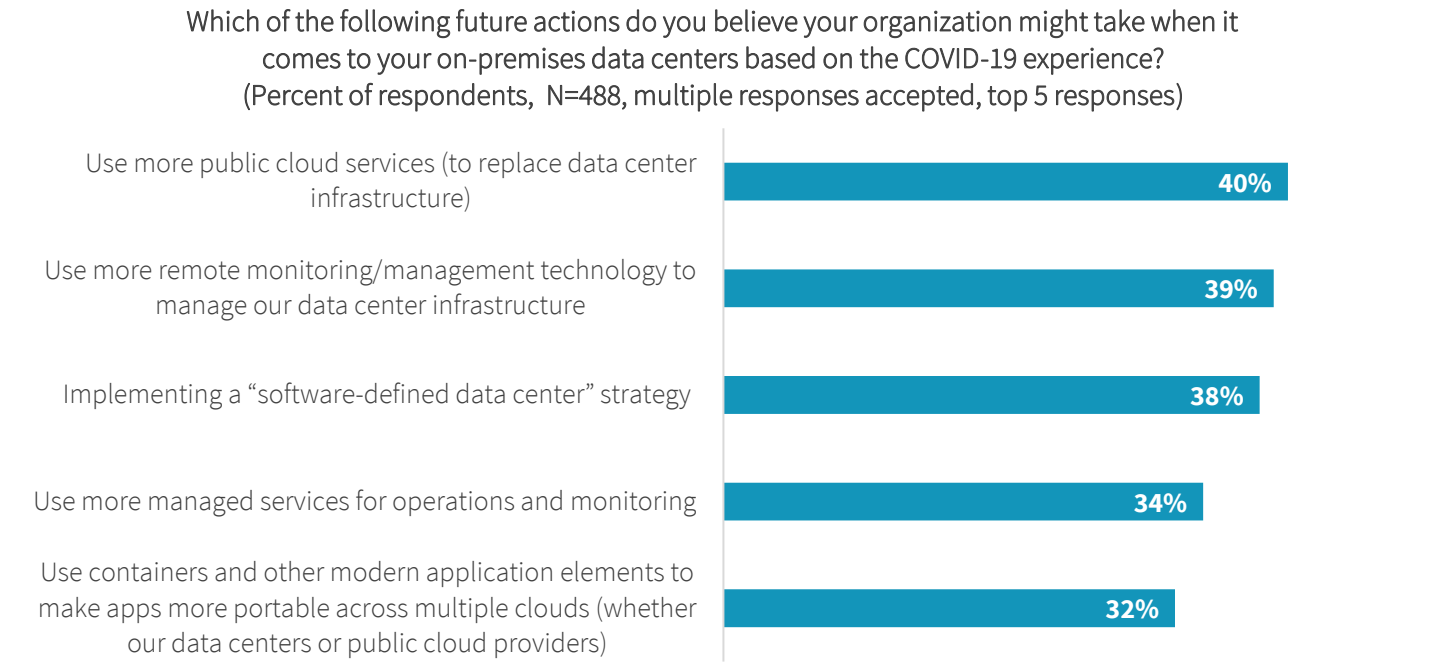
This ESG Economic Validation focused on the quantitative and qualitative benefits organizations can expect from migrating on-premises SQL Server instances to SQL Server on Azure VMs (IaaS) and Azure SQL Managed Instance or Azure SQL Database (PaaS solutions). Using a multi-step scenario analysis, ESG quantified the incremental cost savings of each migration step along the process.

Challenges

On-premises infrastructure has powered SQL Server deployments for legacy applications for some time but may prove to be a barrier for organizations' ability to be flexible and scale when looking to develop, deploy, and operate modern applications. On-premises infrastructure forces IT decision makers to predict the compute, storage, and network needs of the organization, locking them into that decision for the long term. The need to over-provision resources to meet peak demand also requires a large upfront capital investment. Compared to modern alternatives, on-premises infrastructure is slow to deploy and complex to manage and maintain. Planning and scaling infrastructure is difficult, requiring the same planning, justification, procurement, and deployment processes and effort each time the organization grows beyond its current capabilities or deploys new applications.

In today's fast-changing business environment, organizations need to adapt to new market dynamics quickly (sometimes unexpectedly, as we've experienced with recent events). ESG research shows that a significant number of organizations are considering replacing their on-premises infrastructure with public cloud services as a result of the COVID-19 experience.[1]

Figure 1. Top Five Future Actions for Addressing On-premises Data Center Challenges Post-COVID-19 Pandemic



Source: Enterprise Strategy Group

When organizations are slowed down by legacy on-premises infrastructure, they are slower to react to market changes and may even be slower to modernize their entire business. Remote access to on-premises infrastructure also raises security concerns that these resources will not be able to be updated and protected with the latest technology. IT administrators face the difficult task of managing on-premises infrastructure as efficiently as possible while minimizing the costs.

[1] Source: ESG Research Report, *The Impact of the COVID-19 Pandemic on Remote Work, 2020 IT Spending, and Future Tech Strategies*, June 2020.

Balancing these two criteria is a skill unto itself, but there also are a variety of specialized deployment and management skills that IT staff currently possess that may not transfer to the next generation of technology. Finally, there is a shortage of qualified skilled labor to administer on-premises technologies.

The Solution: Microsoft Azure SQL

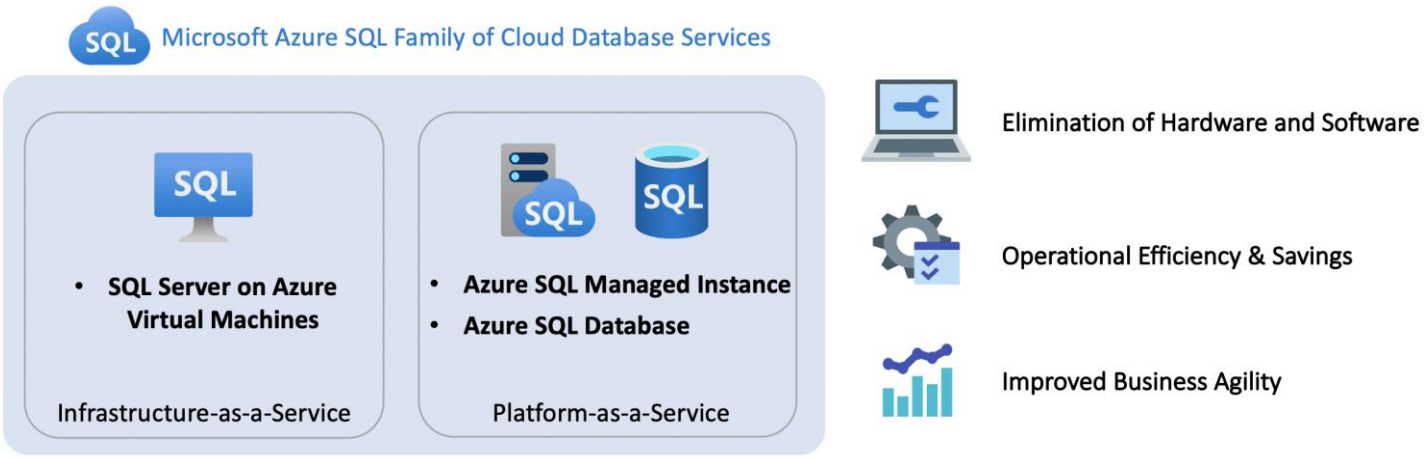
Azure SQL is a family of fully managed, secure, and intelligent SQL cloud database services that support a wide range of application patterns, from re-hosting and modernizing existing SQL Server workloads to modern cloud application development. Azure SQL enables organizations to run SQL Server workloads on Azure's infrastructure-as-a-service (IaaS) offering or a platform-as-a-service (PaaS) offering, depending on which business and application requirements are right for them.

SQL Server on Azure Virtual Machines (VMs) is categorized as IaaS because the SQL Server is run inside a VM in Azure. Customers maintain complete SQL Server compatibility and operating system-level access. SQL Server on Azure Virtual Machines is best for lift-and-shift scenarios or when operating system-level access is necessary.

Azure SQL Managed Instance is a combination of the broadest SQL Server database engine compatibility with all the benefits of a fully managed platform as a service for modernizing existing applications and migrating them to the cloud.

Azure SQL Database is optimized for supporting modern cloud-based applications. Serverless compute and Hyperscale storage options automatically scale resources on demand, so you can focus on building new applications without worrying about storage size or resource management. Azure SQL Managed Instance and Azure SQL Database are characterized as PaaS-hosted services that eliminate the need to manage the database engine and enable organizations to migrate their on-premises SQL Server infrastructure onto a SQL Server in Azure cloud.

Figure 2. The Economic Value of Migrating On-premises SQL Server Instances to Azure SQL Cloud Database Services



Source: Enterprise Strategy Group

Organizations that migrate their databases can seamlessly move first from on-premises deployment to SQL Server on Azure Virtual Machines and save up to 55% off pay-as-you-go rates, use reservation pricing to commit to 1- or 3-year terms to save up to 80%, and take advantage of special Dev/Test pricing to save up to 55% for non-production scenarios.

ESG Economic Validation

ESG completed a quantitative economic analysis around the process of migrating on-premises SQL Server to SQL Server on Azure VMs, Azure SQL Managed Instance, and Azure SQL Database solutions. ESG's Economic Validation process is a proven method for understanding, validating, quantifying, and modeling the economic value propositions of a product or solution. The process leverages ESG's core competencies in market and industry analysis, forward-looking research, and technical/economic validation. ESG conducted in-depth interviews with end-users to better understand and quantify how Microsoft Azure SQL has impacted their organizations, particularly in comparison with previously deployed and/or experienced solutions. In addition to having experience with on-premises SQL Server database solutions, some of the customers interviewed had migrated their environments to Azure SQL and were able to give detailed feedback on ongoing administration differences between the cloud solutions. The qualitative and quantitative findings were used as the basis for a multi-scenario economic model comparing the expected costs of on-premises and cloud-based Azure SQL services.

Microsoft Azure SQL Economic Overview

ESG's economic analysis revealed that organizations have been able to save money, operate more efficiently, and improve business agility by migrating their on-premises SQL instances to Azure VMs. Additionally, ESG found that incremental benefits were realized when organizations migrated modernized instances and development efforts from SQL Server on Azure VMs to Azure SQL Managed Instance and Azure SQL Database. In both scenarios, ESG determined that the Azure SQL family of products provided its customers with significant savings and benefits in the following categories:

- Operational efficiency and savings – Azure SQL offerings significantly reduced the amount of time spent by business decision makers, systems administrators, database administrators, developers, and dev/ops teams by eliminating the need to manage infrastructure and platforms and perform maintenance tasks, and by adding automated functions to further reduce administrative burden.

- Improved business agility – Perhaps the largest benefit reported by customers was the increased business agility achieved by migrating their SQL deployments to Azure. Workloads can easily be scaled up, scaled back, or moved to alternative offerings to seamlessly meet the changing demands of today's business with optimal levels of performance, availability, and functionality.

- Elimination of hardware and software – Migrating on-premises infrastructure to Microsoft Azure VMs enables organizations to eliminate the need to purchase, deploy, manage, and maintain networking, storage, and server hardware and software. Additionally, organizations can extend the benefits by not needing to purchase, manage, and update hypervisors, operating systems, SQL Server instances, and runtime environments when they move from SQL Server on Azure VMs to Azure SQL Managed Instance and Azure SQL Database.

Operational Efficiency and Savings

Azure SQL customers told ESG that they were able to realize significant operational savings of 40-60% by migrating from on-premises infrastructure. By eliminating tasks like planning, deploying, maintaining, troubleshooting, and optimizing their on-premises infrastructure, customers have saved both time and money with Azure SQL.

- Simplified planning, purchasing, and deployment – Customers told ESG that by migrating workloads to Azure, they significantly reduced the amount of time they spend planning, justifying, procuring, and licensing new hardware and software when required for expansion or net-new deployments. In addition, deployment and provisioning of new resources was far quicker on Azure, allowing IT decision makers and systems admins to make resources available sooner and focus more of their time on other initiatives. In addition, Azure SQL Database automatically

allocates compute and storage as needed to completely eliminate the need to worry about managing resource requirements.

- Simplified maintenance – Azure SQL customers reported significant time savings by simplifying or eliminating the need to update and patch systems, test releases for interoperability, or perform routine maintenance. The need to update and maintain server, network, and storage components was completely eliminated and Azure VM's automated features dramatically simplified patching, backup, security updates, and storage configurations. Additionally, for those leveraging Azure SQL Managed Instance and Azure SQL Database solutions, systems admins no longer had to worry about patching or updating the operating system and SQL Server version, yet could be assured they were always running on the latest up-to-date platform with evergreen SQL.

"Patching VMs is major work when you have thousands of them… we don't want to waste our highly paid technical resources to patch infrastructure, so not having to do that was a big benefit of Azure SQL."

- Simplified daily administration – By eliminating hardware, organizations were able to minimize the number of interfaces systems and database administrators use to deal with many of the daily administration tasks through improved automation and integration with Azure services, making tasks like backup, recovery, DR, security, and user-related tasks easier to accomplish. Moving to fully managed PaaS solutions like Azure SQL Managed Instance and Azure SQL Database eliminated many daily administration tasks completely.

"Engineers love to build software – nobody wants to go patch VMs or upgrade databases and infrastructure. Azure lets them focus on what they do best."

- Improved visibility and security – ESG learned that Azure SQL customers felt they had better visibility into their SQL deployments through a unified dashboard, and no longer had to spend time monitoring, reporting, and cross-referencing information across multiple interfaces. Users also reported that security and compliance were improved with Azure. Azure SQL has intelligent Advanced Threat Protection, part of Azure Defender for SQL, that remediates potential threats in real time, gives proactive vulnerability alerts, and has built-in security controls, as well as comprehensive compliance coverage.

- Less time spent troubleshooting, balancing, and tuning – By eliminating hardware and software from multiple vendors, end-users spend far less time troubleshooting issues and dealing with support delivered from multiple vendors. In addition, most Azure customers reported that once they migrated their databases into the cloud, they experienced noticeably improved performance and workload stability. Azure SQL Managed Instance and Azure SQL Database offerings further saved end-users the burden of configuring and tuning the database and operating system for peak performance and availability through AI and machine learning-based automatic tuning behind the scenes.

Improved Business Agility

ESG learned that Azure SQL customers were able to transform operations and became more agile and better able to respond to changes in their businesses once they migrated their databases to the Azure cloud. Customers said that cloud migration was seamless, and they instantly noticed performance and availability improvements, and enjoyed the resource flexibility that the cloud provided them.

- **Fast and seamless migration** – Customers reported that they were able to migrate their existing applications and databases to Azure SQL VMs quickly, easily, securely, and seamlessly. There was no need to learn new tools or languages. Customers were able to continue using their existing licenses and benefited from deeply discounted pricing through the Azure Hybrid Benefit. Free Azure assessment and migration tools such as Azure Migrate and Azure Database Migration Service made planning and migration easy, and customers were able to simultaneously run on-premises and in the cloud to test until they were ready to make the switch.

- **Ability to grow/shrink as needed** – Customers told ESG that they were far better equipped to respond to the needs of their business after migration to Azure SQL. They were now able to spin up new instances quickly and address new business opportunities months earlier than they could have with on-premises deployment. Furthermore, customers who deployed SQL Server on Azure Virtual Machines were able to shut down resources when they were not being used to save money, and benefited from Azure Advisor cost management, which analyzed the environment and sent recommendations on ways to lower their monthly bills.

"Business teams used to have to ask if IT can handle the load if we get more business… with the added agility of Azure there is no question anymore… you just have to go get more business."

- **Cost-effectively handle bursts on demand** – One customer we spoke with was able to take great advantage of the ability to spin up instances when needed and shut them down when not required to handle a very bursty seasonal workload, saving millions of dollars versus having to overprovision on-premises resources for a worst case scenario. Azure SQL Database serverless is also a great way to deploy new applications with unknown usage patterns and resource requirements as resources used by the service are only billed if used.

- **Improved customer satisfaction** – Service provider organizations stated that their customers instantly noticed the improvements in the services they were receiving and were able to tier new and improved levels of products to offer their customers that best fit their needs. Other organizations reported an immediate reduction in the number of support requests received for supported applications.

"We were able to consolidate 7 different platforms, each with their own expertise and languages, into a single unified platform."

- **Simplified consolidation and upgrades** – Some organizations that had built up many SQL instances over time, from different business units or functions or through mergers and acquisitions, reported that the migration to Azure SQL proved to be an opportunity to consolidate, eliminate, or modernize redundant or aging instances to the latest versions of SQL Server.

- **Reduction in risk to the organization** – Customers reported that they were better able to sleep at night not having to worry about hardware failures, HA/DR configurations, manual errors, backups, or security and compliance

issues. Azure removed the burden of risk from the IT teams and gave customers peace of mind through features like Always On availability groups, flexible HA/DR options, automatic security updates, free extended support for legacy offerings, and automated backup and recovery.

- Integration with Azure Services – By migrating SQL workloads to Azure, organizations were in a better position to integrate SQL operations with the entire Azure and partner ecosystem. This further increased the operational agility of the organization, shortened product development and solution enhancement times, and enabled possible future endeavors that would have been far more difficult to achieve on-premises.

Elimination of Hardware and Software

ESG learned from Azure SQL customers that they were able to eliminate significant amounts of hardware and software by migrating their on-premises infrastructure to the cloud. Customers benefited from the upfront cost savings of avoiding capital spending on hardware and software refreshes and licenses. They also saved time and money when they didn't have to operate and maintain on-premises infrastructure. Finally, Azure customers only pay for the resources they use, so there was no need to overprovision.

- No hardware or software to purchase or refresh – ESG found that customers who migrated to Azure VMs no longer had to spend time or money on planning, deploying, and maintaining networking, storage, and server hardware and were able to eliminate some of the cost of virtualization software and backup solutions. Furthermore, ESG learned that customers who then migrated from Azure VMs to Azure SQL Managed Instance and Azure SQL Database were able to save themselves from having to purchase operating system and database licenses, middleware, management tools, and runtime system tools.

"We were looking at a refresh of our on-premises infrastructure, and for us this was logically the right time to try Azure VMs with little risk – we could always go back if needed – but from that point we never looked back to on-premises."

- Reuse of software licenses – Customers were able to extend the value of their investment by transferring Windows Server and SQL Server licenses covered under Software Assurance to Azure VMs, Azure SQL Managed Instance, and Azure SQL Database. In doing so, they were also eligible to receive significant savings of 80% or more on the cost of compute instances through the Azure Hybrid Benefit.

- No hardware to manage – Lifting and shifting workloads to SQL Server in an Azure Virtual Machine freed up IT administrators from having to manage physical on-premises infrastructure while allowing them to continue to leverage existing knowledge of Microsoft environments and learn modern and marketable cloud skills. Moving from Azure VMs to Azure SQL Managed Instance and Azure SQL Database completely eliminated the need to manage virtual infrastructure, operating systems, and databases, streamlining workflows for developers and allowing expert IT resources to focus on other areas of the business. In both instances, ESG found that growing organizations could perform existing and new functions around their SQL database with less experienced, more generalized, and lower cost IT admins when compared with the specialized expertise required to manage the growing complexity of on-premises infrastructure.

- No upfront costs – ESG found that when organizations considered Azure SQL in their capital budgeting decisions, they benefited by avoiding the major upfront capital costs required by on-premises infrastructure. By migrating to Azure SQL and transferring a large capital outlay to an ongoing operating expense, organizations were able to fund higher returning projects earlier in the cycle than if they had to buy on-premises hardware.

- No ongoing maintenance costs – After migrating to Azure SQL and eliminating on-premises hardware and software, customers told ESG that they no longer had to pay for ongoing support and maintenance contracts to multiple vendors. In addition, organizations eliminated all professional services costs required to maintain the hardware. Extended support and maintenance contracts get significantly more expensive once hardware and software becomes 3 years old, so organizations benefited from forgoing that expense as well.

"This move represents a re-architecting of platforms that just grew over time not because it was the optimal solution – but it was what you had, and what worked at the time."

- Reduction in data center operational costs – ESG found that customers who moved their systems to Azure SQL solutions and eliminated hardware reported significant savings by no longer having to pay the ongoing cost of power, cooling, and data center floorspace. Other organizations were able to repurpose hardware for use in other initiatives, effectively avoiding the need to purchase and pay operating expenses for new hardware to serve the purpose.

ESG Modeled Analysis

ESG leveraged the information collected through vendor-provided material, public and industry knowledge of economics and technologies, and the results of customer interviews to create a multi-scenario three-year TCO/ROI model that compares the costs and benefits of migrating on-premises SQL Server instances to Azure SQL cloud database solutions. ESG's interviews with customers who have recently made the transition, combined with experience and expertise in economic modeling and technical validation of Azure SQL, helped to form the basis for our modeled scenario.

ESG based the scenarios on a modeled organization currently running 200 SQL Server instances on-premises. In the first scenario, the organization migrates the on-premises instances to SQL Server on Azure VMs. In the second scenario, ESG compared the organization's cost to continue to support existing modernized applications as well as development of new revenue-generating applications on SQL Server on Azure Virtual Machines (IaaS) with the cost of shifting these workloads to PaaS solutions like Azure SQL Managed Instance and Azure SQL Database.

Modeled Scenario #1: Migrating On-premises SQL Instance to SQL Server on Azure VMs (IaaS)

ESG assumed that the organization's on-premises environment consisted of SQL Server deployments on bare metal and virtualized servers. Virtualized servers were virtualized 4:1 using SQL Server Enterprise Edition, and physical server instances deployed SQL Server Standard Edition. Together, the modeled organization used a mix of 4-core (25%), 8-core (50%), and 16-core (25%) servers and VMs for a total of 200 SQL Server instances migrated to Azure VMs. The on-premises deployment also consisted of 10 top-of-rack networking switches and a SAN storage array providing an average of 500 GB of storage to each instance. Furthermore, ESG assumed Windows Server and SQL Server licenses and Software Assurance would be paid at the same rate for either on-premises deployment or in Azure, so these costs were not included in Figure 3.

First, ESG modeled the difference in cost for the modeled organization to continue operating on-premises with refreshed hardware (left bar in Figure 3) and to continue operating on-premises with existing hardware (middle bar in Figure 3). Refreshing hardware would require the large capital expense of repurchasing existing hardware but with the advantage of running on modern

Why This Matters

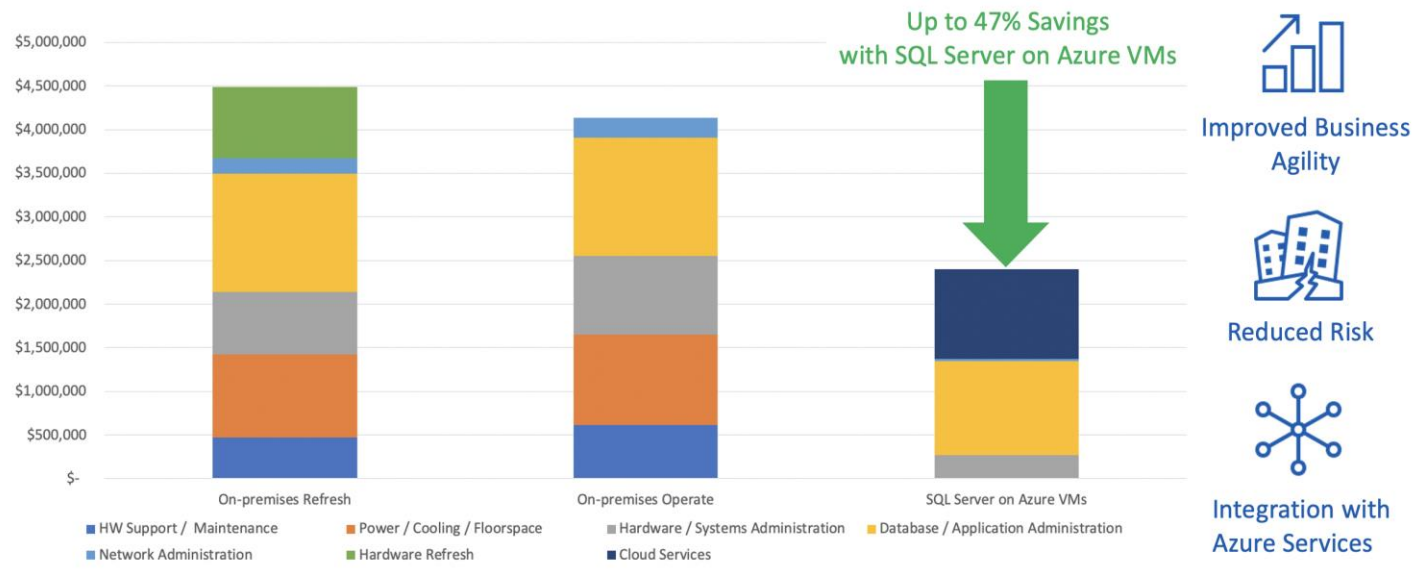
On-premises databases can be expensive to deploy and maintain, and they don't offer the flexibility and scalability of cloud databases. But understanding all of the costs to consider before making a change can be difficult.

ESG's modeled scenarios, based on validation with real world customers, illustrate some of the costs and benefits that should be considered when performing your own TCO analysis.

and dense hardware platforms. Because the refreshed hardware would be more efficient, data center operational costs would be slightly lower than continuing to operate existing infrastructure, which would also require expensive extended support and maintenance contracts.

Next, ESG modeled the cost of running the same workload on SQL Server on Azure VMs. ESG sized the Azure VMs using general purpose Dv3 instances with localized SSD storage that best met the compute and memory requirements for each on-premises instance. The seamless lift-and-shift nature of the migration process minimizes the cost of business interruption, and the modeled organization benefited from a bring-your-own-license model and the Azure Hybrid Benefit for SQL Server and Windows Server. Operating on Azure VMs also allowed the modeled organization to reduce risk, improve business agility, and easily integrate with the Azure ecosystem. As shown in Figure 3, ESG's model found that over a three-year period, organizations can save up to 47% when migrating their database from on-premises deployments to Microsoft SQL Server on Azure VMs.

Figure 3. Expected Three-year Total Cost of Ownership for 200 SQL Server Instances



Source: Enterprise Strategy Group

What the Numbers Mean:

- As long as valid Software Assurance (SA)[2] is maintained, ESG found that Azure SQL on VMs with 3-year reserved pricing and Azure Hybrid Benefit for SQL Server and Windows Server pricing provided a significant savings (approximately 96%) versus on-demand pricing.
- ESG modeled the expected administrative benefits by assuming that the on-premises deployment was currently being managed by two full time systems administrators, three full time database administrators, and half of a network administrator's time. Using what we learned from customer interviews weighed to individual tasks, ESG's models predicted a cumulative 45% lower cost of administration for Azure VMs.
- Many of the additional benefits provided by improved business agility, reduced risk, and ability to integrate with the Azure ecosystem are not reflected in the expected 47% savings, but for some larger organizations, these benefits could easily account for millions of dollars per year and dwarf the 47% savings provided by TCO analysis.

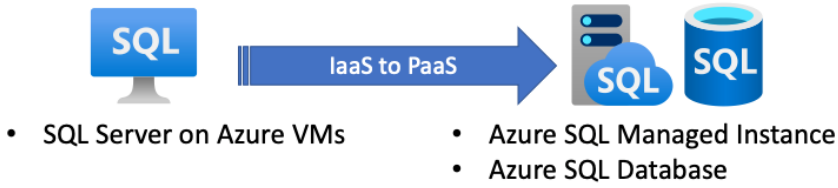
[2] Note the cost of licenses and SA is not included in this chart due to equivalency but should be considered a part of the total cost of the solution.

Modeled Scenario #2: Migrating Azure VMs (IaaS) to Azure SQL Managed Instance and SQL Database (PaaS Solutions)

In certain instances where workloads are modernized to be able to run on the latest version of SQL Server or developed in a cloud-ready manner, organizations can benefit by taking advantage of additional Azure managed services like Azure SQL Managed Instance and Azure SQL Database to further reduce the operational overhead required to manage instances and take advantage of increased business agility for developed applications. In the second scenario, ESG assumed that 50 out of 200 total database instances migrated to Azure VMs were modernized and ready to take advantage of the latest version of Azure SQL Managed Instance. These 50 instances were assumed to be managed by a single systems administrator along with a single database administrator. By moving to SQL Managed Instance, the organization was able to reduce the need to manage the virtualized instances and SQL Server administration cost by 90%, thereby freeing up the admins' time to work on other projects.

In addition, ESG assumed that the organization currently deployed 10 revenue-generating applications on Azure VMs that each generated $250K per month, and a growing development organization was able to develop and release a new revenue-generating app every six months, as well as incremental software updates to existing apps every 3 months. ESG assumed that by moving these applications and development efforts to Azure SQL Database, the two person DevOps team that had been managing the SQL Server virtual machines were completely freed from managing VMs, operating system, and SQL Server instances. In addition, they no longer had to provision new VMs and instances for test/dev or new app deployment or balance and tune the database. The cumulative time savings of forgoing these tasks was calculated to be a 53% reduction in administrative hours.

Figure 4. Assumptions for Migrating Azure VMs to Azure SQL Managed Instance and Azure SQL Database



Modernized SQL Databases		
Number of Steady State Instances	50 x SQL Server on Azure VMs	50 x Azure SQL Managed Instances

Revenue-generating Cloud Applications		
Modernized Cloud Applications	10 x SQL Server on Azure VMs	10 x Azure SQL Database Instances
New Product Dev/ Test Time	6 Months	3.6 Months
Product Update Release Time	3 Months	1.8 Months

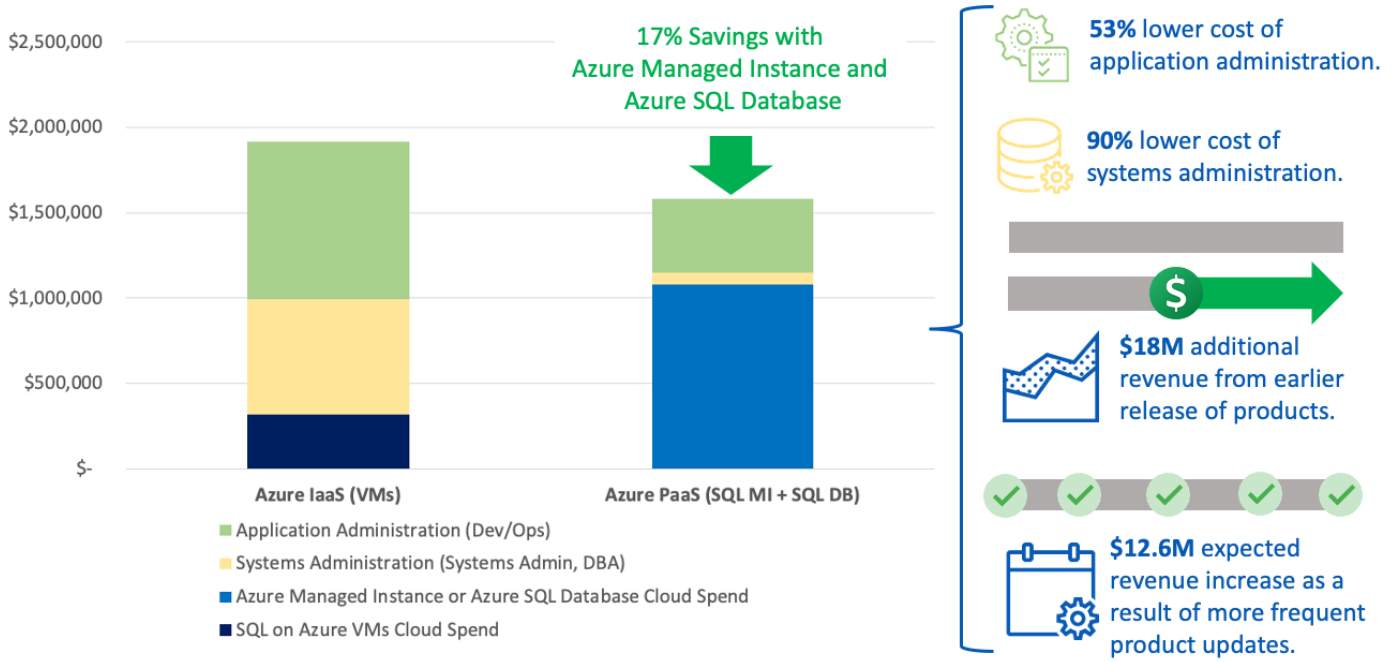
Source: Enterprise Strategy Group

When migrating from VMs to Azure SQL Managed Instance and Azure SQL Database, the time and focus that DevOps and developers are able to redirect to higher value tasks can be vitally important to an organization. In conjunction with modern development methods, by shifting focus from database operations to applications management, developers can create and deploy applications much faster (up to 40% faster time to value). ESG assumed that the faster development cycle, quicker deployment results, and faster time to market would enable developers to reduce the time to develop a new revenue-generating application from 6 to 3.6 months. ESG's model predicted that bringing a new app to market at earlier intervals cumulatively would result in $18M of additional revenue as each application would contribute to revenue streams earlier. In addition, ESG assumed that releasing product updates with increased frequency would result in organizations gaining competitive advantage and differentiation and improve customer retention through faster bug fixes. Finally, ESG

predicted that each product update release would result in an increase in revenue of 1.5%, accounting for a cumulative increase of an additional $12.6M over three years.

As shown in Figure 5, ESG's model predicts that over a three-year period, migrating to Azure SQL Managed Instance and Azure SQL Database would provide a TCO that is 17% lower than continuing to operate databases on Azure VMs. Organizations that migrate to Azure SQL Managed Instance and Azure SQL Database will find that the reduction in spending on application administration and system administration relative to Azure VMs will more than make up for the increased cost of cloud spending. While every organization's requirements are different, and your particular savings may vary, ESG recommends that each organization consider the categories and potential benefits and savings outlined in this report to perform their own analysis to better understand the potential saving.

Figure 5. Expected Three-year Savings and Benefits Provided from Azure SQL Managed Instance and Azure SQL Database



Source: Enterprise Strategy Group

What the Numbers Mean:

- Azure SQL Managed Instance and Azure SQL Database may not be right for every SQL workload. Legacy SQL Server instances, applications, and tools can offer excellent value on SQL Server on Azure VMs. Modernized instances and applications are good candidates to move to Azure SQL Managed Instance or Azure SQL Database.
- While not modeled in this analysis, significant savings can be achieved by organizations whose workloads benefit from the advantages provided by the Azure SQL Database serverless option that are perfect when workload demand is unknown (such as new or bursty applications). The serverless option helps to avoiding overprovisioning of resources when demand is below expectations, enables autoscaling of resources when demand surpasses expectations, and allows pausing of the database to minimize costs for intermittent workloads.
- Although the cost of cloud services for Azure SQL Managed Instance and Azure SQL Database is much greater than that for SQL Server on Azure VMs (3.4x higher), the expected savings in systems, database, and applications administration makes the total cost of ownership for Azure SQL Managed Instance and Azure SQL Database lower by 17%.

- In some cases, the cost of Azure SQL Managed Instance or Azure SQL Database will be higher than SQL Server on Azure VMs. Even in these cases, it is important to consider the benefits provided by freeing up cycles, speeding up workflows, automating AI-powered tuning, and implementing serverless scalability that can directly impact revenue.

The Bigger Truth

SQL Server has powered organizations for decades, enabling organizations to build tools, processes, and products that are critical to both operations and company revenue generation. As these organizations look to modernize and take advantage of the agility offered by the cloud, Microsoft Azure provides a seamless transition to a platform built for SQL that can provide improved business value without risk. Azure offers the expertise, tools, and products that make migration and modernization of SQL Server workloads simple and cost-effective, and development of cloud-ready applications faster and more scalable.

ESG validated the savings and benefits that customers have seen since migrating their on-premises environments to Azure. While cost savings and operational efficiency improvements were certainly substantial and perhaps the largest justification for initially making the transition, every customer we spoke with was truly excited about the many new possibilities and what they meant to their businesses going forward. These organizations were able to transform from being overworked reactive departments supporting legacy applications and struggling to find workarounds to imposed limitations, to feeling empowered with more time, a greater set of skills, and new tools to positively impact the bottom line of the business.

ESG's models conservatively predict a 47% savings for an organization moving on-premises SQL Server instances to SQL Server on Azure VMs, and a further 17% reduction when moving modernized instances and cloud-ready applications to Azure SQL Managed Instance and Azure SQL Database respectively. ESG's models also predict over a $30M improvement to revenue as a result of faster and more agile development and deployment of new applications made possible with SQL Database.

Because every deployment and organization is different, it is impossible to predict the savings and benefits that every organization might achieve. But one thing is certain: By moving your workloads to the Azure cloud, you will immediately become more operationally efficient and be in a better position to react to the changing needs of your business. If you are looking to migrate your on-premises SQL Server deployments to the cloud, modernize your platforms and applications, and streamline the development and deployment of cloud-ready applications, ESG suggests that you strongly consider Microsoft Azure SQL.

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